GAF Commercial

Understanding Cover Boards And the Differences in Materials



We protect what matters most™

GAF

Understanding **Cover Boards**

And the Differences in Materials

The National Roofing Contractors Association (NRCA) strongly and consistently recommends the use of cover boards in low-slope commercial roofing systems. The NRCA first issued guidance on cover boards in 1978 and has expanded its recommendation over time, citing numerous performance and longevity benefits. The use of a cover board is considered good roofing practice and should be consistently incorporated into projects.

The NRCA recommends cover boards to improve the long-term performance and durability of roofing systems in several key areas:

Durability and protection: A cover board creates a high-density layer that protects the insulation underneath from foot traffic, construction equipment, and impact damage from hail.

Wind-uplift resistance: Cover boards increase the wind-uplift value of a roof assembly, helping it better withstand high winds. A cover board can double the wind-uplift resistance of some assemblies or allow for a strong wind rating with fewer fasteners.

Fire resistance: Non-combustible cover boards, such as gypsum boards, act as a protective thermal and fire barrier, limiting the spread of fire.

Improved aesthetics: Cover boards create a smooth, flat surface for the membrane, which prevents aesthetic issues that can telegraph through the membrane from the underlying insulation.

Longevity and cost savings: By protecting the insulation and membrane, a cover board can significantly increase the lifespan of the roof. This additional upfront investment leads to lower maintenance costs and overall lower costs of ownership.

Moisture control: In certain applications, a cover board can act as a separation layer and help mitigate moisture issues.

Warranty compliance: Manufacturers may require a cover board to secure a longer warranty on the roof system.

How do Cover Boards **Protect Roof Systems?**

Gypsum and high density polyiso are manufactured with high compressive strengths compared to other layers in the roof assembly. This hard surface dissipates energy from impact forces, protecting the layers below it. In high wind scenarios the rigidity of cover board materials reduces the risk of deflection and uplift forces.

Polyiso High Density Cover Boards come in three compressive strengths per ASTM C1289, Type IV, Grade 2, 80 psi min - 109 psi max and Grade 3, 110 psi min - 139 psi max, as the most common.

Gypsum products come faced or unfaced and have compressive strengths of 700 and higher. These boards are used when systems have a lot of overburden or heavy traffic, for particular assemblies where polyiso is not an option or when VSH approvals are required.

Rooftop Threat	HD Polyiso	Gypsum
Roof System Installation Foot Traffic	X	X
Roof Maintenance Foot Traffic (e.g., service traffic, equipment, dropped tools)	X	X
HVAC Equipment, Installation, and Maintenance Related Service Traffic	X	X
Rooftop Photovoltaic (PV) Equipment, Installation, and Maintenance Related Service Traffic	X	X
High Wind-uplift Resistance	X	X
"Severe Hail" Rated Roof Assembly	X	X
"Very Severe Hail" Rated Roof Assembly		X

Types of **Cover Boards**

Considerations for determining which cover board is right for your system are weight, R-value, compressive strength, codes and approvals, wind-uplift rating, overall system thickness, and moisture.

High-Density Polyiso Cover Boards

High-Density (HD) polyiso cover boards are an important component in the roof system providing a stable substrate for roofing membranes as well as suitable protection for underlying insulation.

GAF sells a variety of cover boards under the EnergyGuard™HD brand name.

HD ISO benefits include:

- Lightweight for installation efficiencies
- Excellent water resistance
- Easy to cut — no special tools needed
- Virtually dust free
- Mold resistant
- Long-term durability
- Additional R-value
- Single-source availability
- Sustainability — TCPP Free/Red List Free formulations available.

Gypsum Cover Boards

A gypsum cover board is a non-combustible panel, often with mat facers, used on commercial flat roofs to provide protection from impacts, fire, and high wind-uplift, shielding the insulation layer and improving the roof's overall performance and longevity. These boards offer enhanced compressive strength, resistance to hail and foot traffic, and can also improve the fire-resistance and sound-control properties of the roof system. GAF sells cover boards from Georgia Pacific: DensDeck, USG: Securock, and National Gypsum: DEXCell®.

Gypsum benefits include:

- Protection from foot and heavy equipment traffic
- Thermal barrier direct to deck
- VSH rated systems
- Potential for high wind-uplift ratings

Asphaltic Cover Boards

An asphaltic cover board is a protective, moisture-resistant material composed of a mineral-fortified asphaltic core sandwiched between layers of high-strength fiberglass mats. It provides a uniform surface for membrane installation and is crucial for shielding underlying insulation from damage and weather in applications involving modified bitumen membranes. GAF sells cover boards from WR Meadows.

Asphaltic benefits include:

- Excellent water resistance
- High puncture resistance
- Primary use for asphaltic membranes

Cement Board

A cement cover board is a durable, water and mold-resistant building material made from cement and reinforcing fibers, used as a protective layer in low-slope roofing systems to enhance fire resistance, durability, and structural strength against wind-uplift. These boards are known for their excellent strength, mold resistance, and fireproofing capabilities. GAF sells cement boards from USG and National Gypsum.

Cement Board benefits include:

- Superior moisture resistance and compressive strength

Wood-Fiber Board

A wood-fiber board is a high-density fiberboard surfaced with an integrated primed coating. This non-asphaltic material offers excellent adhesion capabilities to optimize bonding with roofing adhesives and membranes in low-slope roof systems. Its rigid, strong, lightweight construction performs as well as heavier materials while keeping roof loads below specified maximums. GAF sells cover boards from Blue Ridge Fiberboard.

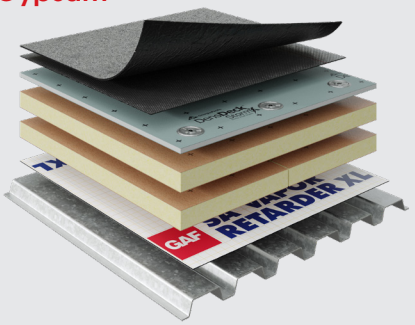
Wood-Fiber Board benefits include:

- Lightweight, fiberglass free, and cuts with a standard utility knife.
- Economical cover board option

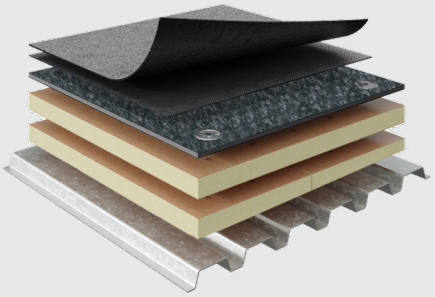
High-Density Polyiso



Gypsum



Asphaltic



Cover boards can extend the life of a roof system up to seven years.

Cover Board Products Should Deliver Fit for Purpose Perfo

Against Hazards. The following chart illustrates a general guide for facts about the different cover boards GA

Product Name	Description	Compressive Strength
POLYISO		
EnergyGuard™ HD Polyiso Cover Board	Standard high-density polyiso cover board	ASTM C1289 Type II Class 4 Grade 1 80 psi min - 109 psi max
EnergyGuard™ NH HD Polyiso Cover Board	Standard TCPP Free/Red List Free polyiso cover board	ASTM C1289 Type II Class 4 Grade 1 80 psi min - 109 psi max
EnergyGuard™ HD Plus Polyiso Cover Board	Higher-density polyiso cover board	ASTM C1289 Type II Class 4 Grade 2 110 psi min - 139 psi max
EnergyGuard™ NH HD Plus Polyiso Cover Board	Higher-density TCPP Free/Red List Free polyiso cover board	ASTM C1289 Type II Class 4 Grade 2 110 psi min - 139 psi max
EnergyGuard™ HD Barrier Polyiso Cover Board	High-density cover board which achieves a Class A fire rating direct to a wood deck	ASTM C1289 Type II Class 4 Grade 1 80 psi min - 109 psi max
EnergyGuard™ NH HD Barrier Polyiso Cover Board	TCPP/Red List Free high-density cover board which achieves a Class A fire rating direct to a wood deck	ASTM C1289 Type II Class 4 Grade 1 80 psi min - 109 psi max
EnergyGuard™ HD-MA Polyiso Cover Board	High-density cover board made with the GRF facer, a more economical choice, for mechanically fastened systems only	ASTM C1289 Type II Class 5 Grade 1 80 psi min - 109 psi max
EnergyGuard™ NH HD-MA Polyiso Cover Board	TCPP Free/Red List Free high-density cover board made with the GRF facer, a more economical choice for mechanically fastened systems only	ASTM C1289 Type II Class 5 Grade 1 80 psi min - 109 psi max
Ultra HD Composite	Composite panel, high-density polyiso manufactured online to a base of 20 psi iso	ASTM C1289 Type II Class 4 Grade 1 ASTM C1289 Type II Class 2 Grade 1 80 psi min - 109 psi max
GYPSUM		
GP DensDeck® Prime	Enhanced coated glass mat faced gypsum cover board	900 psi
GP DensDeck® ProFast Prime	Lightweight gypsum cover board with reduced fastening patterns	880 psi
GP DensDeck® StormX Prime	High performance gypsum cover board with VSH ratings	1800 psi
GP DensDeck® Roof Board	High performance gypsum cover board with VSH ratings	900 psi
DEXCell® FA Glass Mat Roof Board	Heavy-duty coated fiberglass facer and an enhanced gypsum core	900 psi
DEXCell® Glass Mat Roof Board	Fiberglass facer and an enhanced gypsum core	900 psi
DEXcell® FA VSH Glass Mat	Gypsum cover board with enhanced hail, puncture and wind resistance for VSH assemblies	900 psi
USG Securock® Gypsum Fiber Board	Fiber-reinforced gypsum cover board	1800 psi
USG Securock® Ultralight Glass Mat Roof Board	High-performance glass-mat faced gypsum cover board	700 - 1000 psi
USG Securock® Ultralight Coated Glass Mat Roof Board	High-performance glass-mat faced lightweight gypsum cover board	700 - 1000 psi
USG Securock® Weather Defense Roof Board	High-performance Gypsum Cover Board with VSH ratings	900 - 1000 psi
CEMENT		
DEXcell® Cement Board	Moisture resistant lightweight cement and aggregate cover board	1250 psi
USG Securock® Brand Cement Board	Cement cover board that provides superior compressive strength and water durability	1000 - 1250 psi
ASPHALT		
Sturdy-Dek® Asphaltic Cover Board	Multi-ply, semi-rigid asphaltic cover board	1400 - 1700 psi
WOOD-FIBER		
Structo-Dek® HD Fiberboard	High-density wood-fiber cover board with unique bonding characteristics	15 psi

rmance when it comes to **Protecting Roof Assemblies**

F offers. It is always a good practice to involve an engineer to do load calculations if the roof will be overburdened.

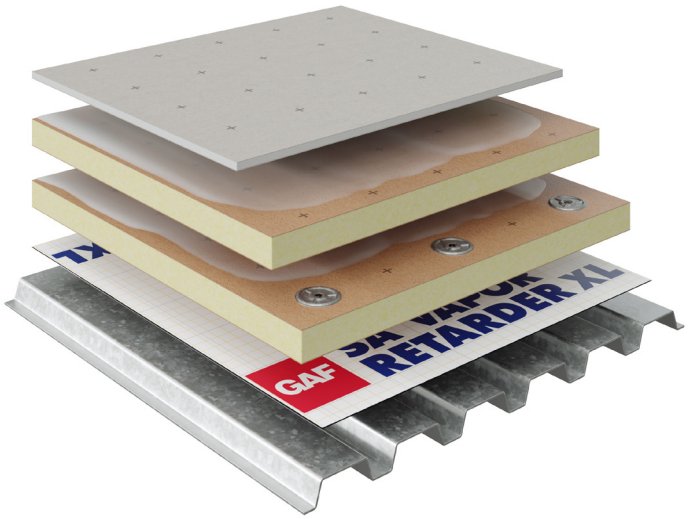
Thickness in.	Weight (lbs.) 4 x 8	R-value	Board Size	Facer	Hail Rating	Mold Resistance ASTM C3273	Single Ply MA: Mechanically Attached FA: Fully Adhered IW: Induction Weld BA: Ballast	Mod Bit CA: Cold Applied HA: Hot Applied T: Torched	FM 1-90 with adhered membrane # of fasteners	Sustainability	Manufacturing
1/2"	11	2.5	4x4 4x8	CGF	SH	X	MA, FA, IW, BA	CA	10		GA, TX, UT, PA, IL
1/2"	11	2.5	4x4 4x8	CGF	SH	X	MA, FA, IW, BA	CA	10	TCPP Free Red List Free — Declare	GA, TX, UT, PA, IL
1/2"	13	2.5	4x4 4x8	CGF	SH	X	MA, FA, IW, BA	CA	10		GA, TX, IL
1/2"	13	2.5	4x4 4x8	CGF	SH	X	MA, FA, IW, BA	CA	10	TCPP Free Red List Free — Declare	GA, TX, IL
1/2"	11	2.5	4x4 4x8	CGF	SH	X	MA, FA, IW, BA	CA	10		GA, TX, UT
1/2"	11	2.5	4x4 4x8	CGF	SH	X	MA, FA, IW, BA	CA	10	TCPP Free Red List Free	GA, TX, UT
1/2"	9	2.5	4x8	GRF	SH	X	MA, IW	CA			TX, IL, UT, PA
1/2"	9	2.5	4x8	GRF	SH	X	MA, IW	CA		TCPP Free Red List Free	TX, IL, UT, PA
1.5" +	18 lbs+	2.5+ iso base	4x4 4x8	CGF	SH	X	MA, FA, IW, BA	CA	10		IL
1/4", 1/2", 5/8"	38 - 80	0.28 - 0.67	4x4 4x8		SH	X	MA, FA, IW, BA	HA, CA	8		
3/8"	52	0.33	4x8		SH	X	MA, FA, IW, BA	HA, CA	6		
5/8"	96	0.67	4x4 4x8		VSH	X	MA, FA, IW, BA	HA, CA	6		
1/4", 1/2", 5/8"	38 - 80	0.28 - 0.67	4x4		SH	X	MA, FA, IW, BA	HA, CA	8		
1/4", 1/2", 5/8"	38 - 80	0.23 - 0.5	4x4 4x8		SH	X	MA, FA, IW, BA	HA, CA	8		
1/4", 1/2", 5/8"	38 - 80	0.23 - 0.5	4x8		SH	X	MA, FA, IW, BA	HA, CA	8	Greenguard Certification	
5/8"	93	0.5	4x4 4x8		VSH	X	MA, FA, IW, BA	HA, CA	8		
1/4", 3/8", 1/2", 5/8"	50 - 102	0.2 - 0.6	4x4 4x8		SH	X	MA, FA, IW, BA	HA, CA	8	Red List Free — Declare Greenguard Gold Certification	
1/4", 1/2", 5/8"	38 - 70	0.36 - 0.54	4x8		SH	X	MA, FA, IW, BA	HA, CA	8		
1/4", 1/2", 5/8"	38 - 70	0.36 - 0.54	4x4 4x8		SH	X	MA, FA, IW, BA	HA, CA	8		
5/8"	99.2	0.54	4x4 4x8		VSH	X	MA, FA, IW, BA	HA, CA	8		
7/16", 5/8"	67 - 96	0.28 - 0.40	4x4		SH	X	MA, FA, IW, BA	HA, CA	8	Greenguard Gold Certification	
1/2", 5/8"	77 - 96	0.39 - 0.49	4x4 4x8		SH	X	MA, FA, IW, BA	HA, CA	8		
1/8", 1/4"	21 - 51		4x4 4x5 4x8			X	MA, FA, IW	CA, T	10		
1/2", 1"	22– 44	1.3 - 2.5	4x4 4x8				MA, FA, BA	HA, CA, T	10	USDA Certified Biobased Product MAS Certified Green Low-Emitting Materials Red List Free	

GAF **Common Assemblies**

Traditional **Assembly**

Assemblies using two layers of polyiso insulation, and an HD polyiso cover board or Gypsum cover board, differ in R-value and weight.

Product	Overall Thickness	R-value	Overall Weight
HD Polyiso + two layers of iso	5.7"	30	40 lbs.
½" Gypsum + two layers of iso	5.7"	28	82 - 116 lbs.

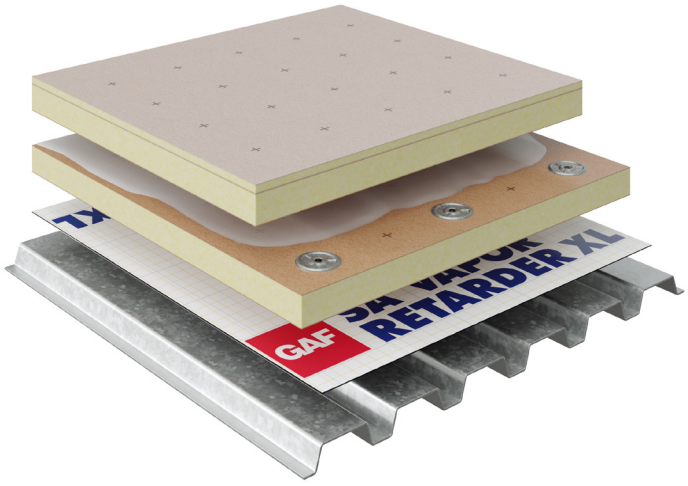


- Two layers of EnergyGuard™ Polyiso Insulation
- Two applications of adhesive
- Cover board layer — EnergyGuard™ HD Polyiso Cover Board or Gypsum

Composite **Assembly**

Assemblies using Ultra HD Composite panels offer a thinner overall assembly thickness, less overall weight, higher R-value, and one less application of adhesive than an application using gypsum.

Product	Overall Thickness	R-value	Overall Weight
Ultra HD Composite	5.5" (Base layer of 2.6 EnergyGuard™ Polyiso + 2.9 Ultra HD Composite overall thickness)	30	43.2 lbs.



- One layer of EnergyGuard™ Polyiso Insulation
- One application of adhesive
- One layer of Ultra HD Composite



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